



Ø BEAT

COLORADO SPRINGS,
COLORADO

APRIL 1984

MEETING MEETING MEETING MEETING MEETING MEETING

The next regular regular meeting of the Pikes Peak Radio Amateur Association will be at Guiseppe's Depot in the "Baggage Room" as was last months meet. Bring the wife and have dinner before the meet. (A sexist comment! Girls may bring their husbands, also. Sorry 'bout that.) See you all at the meeting.

MEETING MEETING

FORMULAS & EQUATIONS

OHMS LAW (AC)

- f = FREQUENCY (Hz)
- L = INDUCTANCE (HENRIES)
- C = CAPACITANCE (FARADS)
- Z = IMPEDANCE - AC RESISTANCE (OHMS)
- X_L = INDUCTIVE REACTANCE (OHMS)
- X_C = CAPACITIVE REACTANCE (OHMS)

$$f = \frac{1}{2\pi\sqrt{LC}} \quad \frac{1}{2\pi\sqrt{CX_L}} \quad \frac{1}{2\pi\sqrt{L}}$$

$$X_L = 2\pi fL$$

$$X_C = \frac{1}{2\pi fC}$$

$$L = \frac{X_L}{2\pi f}$$

$$C = \frac{1}{2\pi fX_C}$$

$$Z = \sqrt{R^2 + X_L^2} \quad \sqrt{R^2 + X_C^2}$$

$$Z = R \text{ when } X_L = X_C$$

$$\lambda^{\circ} \text{ ANT. LENGTH } \lambda = \frac{480}{f(\text{MHz})} \quad (N = \text{NO. OF HALF WAVES IN ANT.})$$

$$\lambda^{\circ} \text{ ANT. ABOVE 30MHz} = \frac{292 \times K}{f(\text{MHz})} \rightarrow \text{FL} = \frac{5805 \times K}{f(\text{MHz})} = \text{inches}$$

(K = RATIO OF ANT DIAMETER TO LENGTH)

$$\lambda^{\circ} \text{ ANT. BELOW 30MHz} = \frac{480}{f(\text{MHz})} \text{ FL}$$

$$\lambda^{\circ} \text{ ANT. } \frac{480}{f(\text{MHz})} \text{ FL} \quad f(\text{MHz}) \div 2 \quad \lambda^{\circ} \text{ (above 30MHz)} \times 100$$

OHMS LAW (DC)

$$P = \text{POWER (WATTS)} \quad R = \text{RESISTANCE (OHMS)}$$

$$I = \text{CURRENT (AMPS)} \quad E = \text{ELECTROMOTIVE FORCE (VOLTS)}$$

$$R_T = \frac{E}{I} \text{ FOR SERIES}$$

$$R_T = \frac{E}{I} \text{ FOR PARALLEL}$$

$$\text{FOR CAPACITORS IN SERIES, SUBSTITUTE } \frac{1}{C} \text{ FOR } R$$

$$\text{CAPACITANCE \& RESISTANCE TOTALS SAME FORMULAS}$$

$$\text{WITH OPPOSITE USAGE}$$

FORMULA WHEEL - AC



FORMULA WHEEL - DC



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Board Member	* Frank Drake KL7IPV 4964 Harvest Rd. 80917	597-2406
Board Member	Jake Jacobs NØCYR 104 Old Broadmoor Rd. 80906	634-2223
Board Member	Doc Cornel WØMCT 721 Lansing Dr. 80909	596-4216

ZERO BEAT is published monthly in the interest of the the members of the Pikes Peak Radio Amateur Association Inc., Colorado Springs, Colorado. Permission is given to reprint articles or excerpts provided credit is given. Deadline for submission of articles is the 21st of the month. Classifieds accepted anytime.

The Pikes Peak Radio Amateur Association meets on the second Wednesday of each month at Giuseppe's Depot Restaurant at 10 S. Sierra Madre at 7:30 p.m. All amateurs and interested parties are invited to attend.

Editor: Frank Drake KL7IPV, 4964 Harvest Rd. Colorado Springs, CO 80917 597-2406

GENERAL MEMBERSHIP MEETING March 14th, 1984

Present were 60 members and guests. meeting was held at Giuseppe's Depot, 10 S. Sierra Madre.

A member of the FM Repeater Association was in attendance and announced that the 37/97 machine was open for general use. The auto-patch is controlled access and can be accessed by all current members, if access is needed, the calling ham can have it brought up by one of the current members. Every one is encouraged to support the 37/97 group, dues are \$20 annually. The dues cover a full twelve months starting at the time the dues are paid.

Treasurer's report: Balance Feb 8th: \$2746.39. Income \$375.50. Expenses: \$160.58. Balance Mar 14th: \$2961.31.

RFI Committee. A chairman is needed to chair this committee. Doug explained some of the duties and that the position is important. It includes PR on the behalf of all hams. Leo, WØGOW, volunteered to help whomever takes on the position.

Swapfest. The three prizes are: a 19" color TV for 1st prize; a Bearcat 210XL synthesized scanner for 2nd prize; and 3rd prize is a choice of \$100 cash or a certificate good for \$125 in merchandise from Miley's Radio. Thanks to Jess for his support in the form of paying for half of the ticket printing costs and adding \$25 to the 3rd prize certificate. Jake needs help with the concessions. Jody will help with the bake sale.

Mike, KØTER: Project Concern-Walk for Mankind. April 14th, 6AM to 3PM, or thereabouts. March of Dimes Walk America, April 29th, 8AM to 5PM, or thereabouts. WØVYU has been renewed.

Dennis Smith has donated a lot of equipment, a list will be available soon. Mike is starting, and wants everyone to join in, a RTTY 2 meter net on 146.445 every night.

Education: Mark said the novice classes will start on April 10th, at North School. Cost will be a one time fee of \$2, paid the first night.

EL PASO / TELLER COUNTY ARES APPLICATION

If you want to pledge your time to assist others in case of emergency, in the founding spirit of amateur radio, please complete this form and return it to your local Emergency Coordinator, Bruce Petrarca, KXOE.

CALL SIGN _____ LICENSE CLASS _____ PHONE _____

LEGAL NAME _____ NICK-NAME _____

HOME ADDRESS _____

CITY _____, CO, ZIP _____

ARE YOU AN ARRL MEMBER? ----- WILL YOU ACCEPT AN APPOINTMENT? -----

LIST AREAS OF INTEREST _____

DO YOU HAVE AVAILABLE ANY SPECIAL VEHICLES? ----- (Explain on reverse.)

DO YOU HAVE ANY PHYSICAL LIMITATIONS? ----- (Explain on reverse.)

If you can be activated from your business in case of ACTUAL EMERGENCY, please list:

NORMAL WORKING HOURS: ----- TO ----- PHONE NO -----

ARE YOU AN NTS OPERATOR? ----- LEVEL & MODES -----

DO YOU HAVE A CURRENT ARES CARD? ----- EXPIRATION DATE -----

Please list below all your STATION capabilities (whether or not you have the license class to utilize these capabilities). "EM PWR" means you have generator or battery power in the event of failure of the mains.

```
*****
* MHZ * 1.8 * 3.5 * 7.0 * 14. * 21. * 28. * 50. * 144 * 220 * 440 *
*****
* CW * * * * *
*****
* SSB * * * * *
*****
* FM ***** * * * *
*****
*MOBILE* * * * *
*****
*EM PWR* * * * *
*****
* HT ***** * * *
*****
```

For 144 MHZ listings please show the additional information:

FIXED: POWER ----- SYNTHESIZED? ----- LONGEST CONSISTENT DX -----

MOBILE: POWER ----- SYNTHESIZED? ----- ANTENNA -----

HT: POWER ----- SYNTHESIZED? ----- (if not, list xtal freq on back)

DO YOU HAVE AN EXTERNAL ANTENNA WHICH CAN BE USED WITH YOUR HT? -----

SIGNATURE _____ DATE _____

minutes (cont.)

CCARC: PPRAA is hosting the CCARC on March 24th the Showbiz on N. Academy. Everyone is invited to attend. There is no cost for attendees. Repeater Committee starts at 12 noon. Regular meeting starts at 1PM.

Board election: Doc, W0MCT, and Oak, K0ROL, were nominated for the board position. There were no nominations from the floor. A vote by secret ballot was taken. Doc was elected to the board.

It was announced that a picnic will be held on August 12th. A break followed the election.

ARRL visitors were introduced: Bill Sheffield, KQ0J, and his wife; Bill Merit, Section Emer. Coordinator; Darla Richardson, Affiliated Club Coordinator. Kudos given to PPRAA in public service as a designated Special Service Club. The only one in Colorado. Steve Lavin, NC0F, RFI Coordinator, needs OO's. Anyone interested may contact him or WA4RFR. 21 Volunteer Examiners have applied but more are needed. Contact Bill for applications. ARRL Rocky Mountain Division Convention will be held in the Holiday Inn Holidome Convention Center on May 25, 26, 27th, 1984. Registration cost before May 10th is \$5, after that the cost is \$7. Contact Al, N0CMW, for info or registration forms. There will be many, many prizes and different funtests for the attendees. Many "big-name" companies will be on hand to show their wares. Grand prize is a TS430S and PS30.

Bill, KQ0J, moderated a discussion of ARES & RACES - problems, solutions, and things in the "works". The ARRL will have a booth, or two, at the PPRAA Swapfest.

Meeting adjourned at 9:40PM.

Respectfully submitted,
Mark, N0EPF

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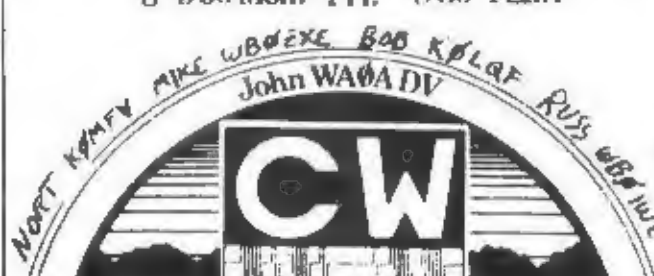
MICROPHONES

NEW MEMBERS

Ken Keyte, W0TGL, 3812 Windsor Ave., Colorado Springs, CO 80907, 594-9642 E.
Dennis McCormack, N0FEC, 1635 Sawyer Way, Colorado Springs, CO 80909, 574-4471 T.
Mark Stang, W89NFE, 314 Nichols Ct., Colorado Springs, CO 80905, 471-3397 G.
Tom Weatherly, AD0O, 2010 N. Carlton Ave., Colorado Springs, CO 80909, 475-0192 E.

If it's CW, it's communications.

832-	ALL MAJOR BRANDS	832-
1111	SALES SERVICE	1111
8-530 Mon.-Fri. 8:30-1 Sat.		

**CW**

C W ELECTRONIC SALES CO.
800 Lincoln St. Denver, CO 80203

WANTED; Short Wave adapter for a Blaupunkt (German) radio. Radio was made in the 60's for automobiles of the Volkswagen and Mercedes type. Call Win Lyons at (H)691-1227 or (W)687-9229 if you can help locate one of those babies.

FOR SALE: Henry Radio - Tempo 2020 w/mic & matching external spkr. #8120 and matching remote VFO #8010. HEATH Phone-patch model HD-15. MFJ Signal Enhancer, tunable CW/SSB filter Model MFJ 751 w/pwr supply. Call Don Chatelain, WDØBSZ at (H)1-683-2883 or (W) 471-8522 from 9AM to 3PM. DON WILL BRING SOME THINGS TO THE SWAPFEST.

Heath Kit HW-100 80-10 meter xcvr, HP-23 power supply, mike, and speaker \$150.00

Heath Kit SB-610 Monitor Scope \$50.00

Heath Kit SB-630 Station Monitor with Digital Clock \$50.00

Heath Kit SB-640 ^{US} 5 meter xcvr, "As is" \$50.00

Heath Kit SB-650 Digital Display \$50.00

Hygain TH-3JR 3 element triband beam \$75.00

Hygain 18AVT 80-10 meter trap vertical \$50.00

Contact E.J. Lund, KDØNB, 594-9976 (home), or 594-1097 (work).

BOARD MINUTES FOR MARCH 19th, 1984 7:35 PM

Present at the meeting were: Mark, NØEPF; Charlie, KCØTI; Jake, NØCYR; Al, NØNMW; Frank, KL7IPV; Doc, WØMCT; Les, KCØNC; Harley, KCØTQ; Mike, KØTER; and Bill, KQØH.

Harley requested that the board provide monies to make new audio tapes for use in the novice classes. The existing tapes have been used so much that they are now unusable. The existing tapes do not now follow the novice course and needed to be updated for that also. A church has an audio tape duplicating machine that the club can use for a small donation. The tapes will cost approximately \$48.00. Bill moved to authorize Harley to buy 120 audio tapes and to donate \$25.00 to the 1st Methodist Church. Motion seconded by Jake and passed unanimously.

Frank gave a report on the Swapfest. Tickets are available. Members may contact Frank to obtain tickets for distribution. Les moved to advance Frank \$700 for the purchase of the prizes. Motion seconded by Doc and passed unanimously. A HF and 2Mtr station will be set up at the Swapfest to show visitors what such an operation entails. WAØVTU will be on the air for the day.

Bob, KØDJ, will try to get Ed Means for a program on Severe Weather or a computer RTTY demo/info session will be held for the April program.

Bill, KQØH, moved to have the board recommend that the membership have an auction to sell certain club equipment that will be on a list provided to the membership at the April meeting. Seconded by Frank, passed unanimously.

Meeting adjourned at 9:20 PM. Next board meeting at Bill's KQØH, house on April 16th. 5

HOMEBREW CORNER

Greetings budgeteers! If you're thinking of getting into RTTY and can't afford the "Big bucks" store-bought T.U./Modulators, take heart! Because I am about to share with you some "School-of-hard-knocks" wisdom on how easy it really is to build-it-yourself.

Since there seems to be a great profusion of "almost all you need" RTTY type surplus around, I'll start with the item you most likely will not find in a surplus pile--the AFSK MODULATOR!

The heart of this circuit is the VCO portion of a NE567 tone decoder IC, selected for its stability. Output from the VCO, taken from the junction of the RC time constant, is a low-level triangle wave, which is successively amplified and shaped into a nearly perfect sine-wave by amplifier stages Q5 and Q6. The audio output from Q6 will be about 2 volts peak-to-peak, and is more than enough to drive any HF or VHF rig plus monitoring accessories.

The VCO normally runs at the SPACE TONE and is shifted to the MARK by a low from the collector of Q2 through variable resistor VR1.

Switching transistors Q1 and Q2 provide the vco mark and space switching from the tty loop supply. Depending on the voltage present in your loop supply, resistor RA may require some adjustment in value (to avoid blowing the top off Q1). The correct value should completely saturate Q2 when it's base is driven high. The value shown is for about 50 volts. If your keying voltage is reversed from that shown, (I.E. Space=Low) remove Q2 and R1, and insert jumper J1.

Q3 and Q4 are keying for the SW ID via an external key. VR3 may be adjusted for reduced shift during your ID.

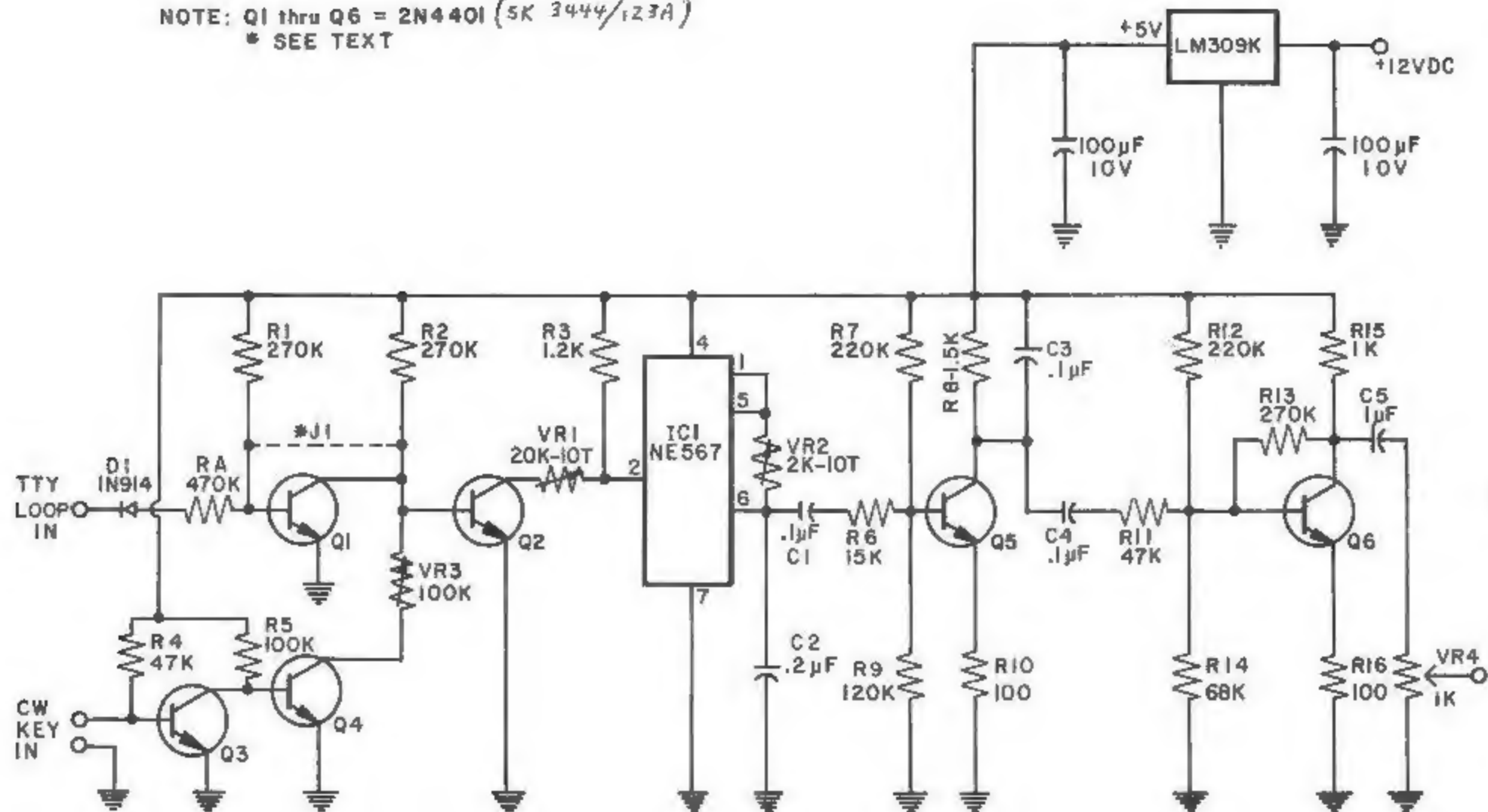
The 5V power for the circuit is drawn from an LM309K regulator IC. At about 100ma drain, this regulator doesn't even know it has a load, and thus provides the absolutely rock-steady +5 VDC needed for staying on dead-center.

Alignment must be done SPACE-FIRST. Force your loop to space and adjust VR2 for the correct space tone. Then return the loop to mark and adjust VR1 for the correct mark tone. Adjustment of the "mark" should not affect the space adjustment--if you re-adjust the space you may have to re-adjust the mark also.

The prototype of this circuit fit easily onto a 2 x 3 inch perf-board (holes on .1 inch centers), and since nearly all of it was built from junk-box parts, I can only guess at the "cost of parts to build" (about \$10.00 at the local outrageous prices...).

This should at least get you started anyhow... GOOD LUCK, and C U on "70".

NOTE: Q1 thru Q6 = 2N4401 (5K 3444/123A)
 * SEE TEXT



Design by: ROY H. HANSEN
 Drawn by: SHANNON T. ST. JOHN



ARRL ROCKY MOUNTAIN DIVISION CONVENTION & CONFERENCE

SPONSORED BY: COLORADO SECTION CLUBS
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MAY 25,26,27, 1984

UPDATED INFORMATION ON CONVENTION AS OF MARCH 84.....REASONS TO ATTEND.

FORUMS AVAILABLE

ANTENNA'S
CONTESTING
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PACKET RADIO
PROPAGATION
RTTY
SATELLITE
TRAFFIC
UHF/VHF

ARRL Forum: Meet with:
Carl Smith, W0BWJ, Lys Carey, K0PGM,
Sally O'Dell, KB10, Jim Clary, WB9IHH

SHOWROOM BOOTH SPACE & MORE COMING

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SPECIAL GROUP EVENTS

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CCARC
QCWA
MARS
NTS-CTS
MARCCO

HOSPITALITY ROOMS

CCARC, DRC, RMRL, ARA, MARCCO

INDOOR SWAP MEET

LADIES ACTIVITIES

AURORA MARKETING (CUSHCRAFT, LARSEN, BIRD)
HEATHKIT
ICOM
KANTRONICS
LEISURE TIME
MILEY'S Radio
W0JNI Jerri Arnold
NWS, QCWA

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BEALE ELECTRONICS
COLORADIO RESEARCH
COMMERCIAL T.V. K0DU
ENCOMM
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HEATHKIT
KANTRONICS
PMM WESTERN WEAR
RADIO SHACK
WORLD RADIO
CUSHCRAFT ANTENNA'S

AURORA MARKETING
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CQ RADIO
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W00DUV
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C/O BILL SHEFFIELD, KQ0J, SECTION MANAGER
1444 Roslyn Street....Denver, Colo 80220

NAME.....CALL.....

ADDRESS.....

REGISTRATIONS \$5.00, AFTER MAY 10th \$7.00

BANQUET (SAT) SPECIAL PRIZES \$15.00

BRUNCH (SUN) \$7.00

Hotel Room Rate, \$49.50 per nite (4 to a room)

MILEY'S RADIO

Jess KOTAA 719 W. 7th St. Florence, Colorado 81226 784-3040
Hours 8 to 6 Tuesday through Friday — 8 to 1 on Saturday. Closed Saturday PM, Sunday and Monday.
Evening Hours 7 to 9 (Call Ahead)

NEW EQUIPMENT IN STOCK

Kenwood TS 930S Sale \$1380 w/auto tuner \$1545.
Kenwood TS 430S \$775.
PS 430 Power Supply \$134.
Kenwood AT130 antenna tuner-shop demo w/warranty \$110.
Kenwood AT250 auto antenna tuner for 430S \$290.
Icom 730 \$599.
Kenwood 4000A 2m & 440 FM Xcvr List \$699 Sale \$540.
Same as above w/ voice synthesiser \$580.
Kenwood TR-7950 45W List \$439 - sale \$345.
Kenwood 7930 \$314.
Kenwood TR 2500 HT \$288.
Kenwood TM201A mini 25 watt FM w/ext. spkr. \$325.
FC 10 freq controller for 201A-List \$49.95 \$45.
New Santec 142 2M HT-Best HT on the Market \$279.
Santec 144uP 2M HT \$265.
Santec 440uP 440 Mhz HT \$279.
Tokyo Hi Power 32V 2/30 watt 2 mtr FM 55B amp \$74.
Tokyo Hi Power 30V 2/30 watt 2 mtr FM amp \$59.
Tokyo Hi Power 160V 25 watt drive — List \$329 Sale \$279.
Tokyo Hi Power 160V 3/10 watt drive — List \$349 Sale \$289.
Tokyo High Power HC 50 80-10 SWR/watt meter — 200 watt
tuner w/ WARC bands. List \$100 Sale \$79.
Icom 2AT HT Reg. \$269 Now \$214.
Icom 25H — Green LED 45 W \$340.
New Icom 25A Green LED \$310.
Vocomm Power Pocket for IC 2A \$175.
New Azden PCS 4000 \$269.
New Azden PCS 300 HT \$269.
New KDK 2033 mini 25W w/TTM & LCD display \$279.
Yaesu FT 208R 2 mtr. synth. HT \$269.
Kantronics interface for VIC 20 and others \$125.
Kantronics Hamsoft for VIC 20 \$46.
Kantronics Hamtext for VIC/Com 64 \$90.
AMTOR Soft In Stock - \$90.
Kantronics Interface II - \$245.
Kantronics Field Day II CW/RTTY reader-demo \$175.
New MFJ 1224 interface in stock \$90.
New MFJ 1224 interface w/MFJ CW/RTTY/ASCII-comb. price \$125.
Commodore 1702 color monitor \$245.
Commodore 1541 Disk Drive \$239.
Commodore MPS 801 printer \$215.
Software Galore For The Commodore 64

USED EQUIPMENT

Icom 25A w/2 mounting brackets-exc. cond. \$245.
Icom 255A w/o TTM \$175.
Icom 255A w/TTM \$200.
Icom 2A \$150.
Kenwood TR 7800 \$200.
Vocomm Power Pocket \$125.
Yaesu FR 101D digital rcvr w/CW filter \$275.
Yaesu FRG 7 general coverage rcvr. \$150.
(2) Yaesu phone patches \$50 each.
Yaesu FT 207R synth HT \$135.
Swan 100MX solid state HF mobile - mint \$275.
Swan PSU 5 power supply \$95.
Azden PCS 2000 excellent condition w/TTM \$175.
Midland 13-510 1 & 25 watt 2 meter mobile \$150.
Henry 2/5 in 135 out 2 meter amp \$135.
KLM 30/140W 2 meter amp \$85.
KLM 2/70W 2 meter amp \$85.
Dentron 80-10 AT 200 W tuner \$45.
Heath SB 200 linear \$250.
Heath IM 2410 freq. counter - 225 MHz \$100.
Galaxy 5 w/ AC supply and speaker \$195.
Galaxy DC1000 mobile power supply \$25.
Collins crystal pack — 117 crystals in plastic pouch \$150.
Dentron GLA 1000 1.2 kw PEP amp \$220.
National NC 300 rcvr. w/calibrator-Mint \$125.
Military rcvr. 2-18 MHz, works good \$35.
Atlas 210X \$300.
PS for Atlas \$60.
Mounting brackets \$15.
Atlas 350 xl w/p.s., like new \$550.

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Membership Application

PIKES PEAK RADIO AMATEUR ASSOCIATION

Name _____

Address _____

City _____ State _____ Zip _____

Call _____ License Class _____

Are You An ARRL Member? ☐ Yes ☐ No Telephone _____

Full Member \$12.00 ☐

Family Membership \$15.00 ☐

Additional Names _____ Calls _____

Associate Member \$8.00 ☐ (Outside Teller & El Paso Counties.)

EST SWAFFEST SWAFFEST SWAFFEST SWAFFEST SWAFFEST SWAFFEST

The PPRAA Swapfest will be held on April 15th at the International Polka Palace on Busch St. off of 21st Ave. The hall will open at 8:00AM to set up booths. The general public, (that's them that don't have booths, folks) will be admitted at 9:00AM to get the fun and frivolity going. The drawing will be held at 3:00 PM. Come one, come all! Let's make this one our best one.

SWAFFEST SWAFFEST SWAFFEST SWAFFEST SWAFFEST SWAFFEST SWAFF

ARES ARES ARES ARES ARES ARES ARES ARES ARES ARES ARES

The 37/97 machine is now used weekly for the ARES net on Wednesdays at 7:00PM. There is a form in this newsletter, for those who haven't signed up for ARES, to fill out and send to Jake, NØCYR.

ARES ARES ARES ARES ARES ARES ARES ARES ARES ARES ARES



Ø BEAT

COLORADO SPRINGS,
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Frank Drake KL7IPV
4964 Harvest Lane
Colorado Springs, CO 80917



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